

APPLICATION FOR UNITED STATES LETTERS PATENT

For

A METHOD AND APPARATUS TO ENABLE MASS MESSAGE
PUBLICATIONS TO REACH A CLIENT EQUIPPED WITH
A FILTER

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**A METHOD AND APPARATUS TO ENABLE MASS MESSAGE
PUBLICATIONS TO REACH A CLIENT EQUIPPED WITH
A FILTER**

FIELD OF THE INVENTION

[0001] This invention relates to bulk unsolicited electronic messages, in one embodiment, known as spam. In particular, the invention relates to an invention and apparatus for preventing spam from reaching an inbox or incoming mail folder of an email client.

BACKGROUND

[0002] One form of electronic communication includes electronic mail ("email"), which allows people to communicate with each other almost instantaneously, which in itself gives email a considerable advantage over conventional mail (also known as snail mail). However, email has several other advantages over snail mail, including the ability to send graphics, images, sound files, text, etc., within a single document. The term "email" as used herein is to be interpreted broadly to include any type of electronic message including voicemail messages, short message service (SMS) messages, multi-media messaging service (MMS) messages, facsimile messages, and other forms of communication. The above-mentioned advantages have resulted in email becoming almost ubiquitous in its popularity.

Concomitant with this rise in the popularity of this mail over snail mail, has been the rise in the number of bulk unsolicited email messages (also known as

spam). Spam detracts somewhat from on the advantages of email in that it is annoying to receive and can lead to a reduction in productivity.

The growth in spam has spawned a whole generation of anti-spam software that essentially seeks to filter out spam before it is delivered to the inbox of an email client. Generally, anti-spam software makes use of anti-spam filters that filter email based on the content of the email. For example, certain words and phrases such as "making money," are known to be commonly used by spammers (the people who have send spam) so that a filter can be designed to filter out email that use these words and phrases.

However, sometimes an email publication such as an email newsletter to which an email user is subscribed may end up being erroneously blocked as though it was spam because to a spam filter the email publication has attributes that make it resemble spam, e.g., the email newsletter may contain words commonly used by spammers.

BRIEF DESCRIPTION OF THE DRAWINGS

[0003] Figure 1 shows an architecture within which embodiments of the present invention may be practiced;

[0004] Figure 2 shows a functional block diagram of software in accordance with one embodiment of the invention;

[0005] Figure 3 shows a high level functional block diagram of a client in accordance with one embodiment of the invention;

[0006] Figure 4 to 6 illustrates methods in accordance with embodiments of the present invention; and

[0007] Figure 7 shows a high-level block diagram of hardware that may be used to implement the methods of the present invention.

DETAILED DESCRIPTION

[0008] In one embodiment, the present invention discloses a technique in which a client makes use of a remote server to determine if an electronic message or communication has been registered. If the message has been registered then the message is delivered to an inbox of the client, otherwise appropriate action may be taken including deleting the message or placing it in a folder that contains only filtered messages. In another embodiment, the client maintains a subscribed list and an unsubscribed list. A user of the client has the ability to toggle messages between the subscribed and unsubscribed lists. In one embodiment, after it is determined that a message is registered then a further check is performed to determine if the message appears on the unsubscribed list. If the message appears on the unsubscribed list then it is not delivered to the inbox and may, in some embodiments, be automatically deleted. If the message appears on the subscribed list then the publication is placed in the inbox. Thus, embodiments of the present invention afford a user the ability to manage subscriptions to selected electronic publications and messages. For example, (give email scenario example) other advantages of the present invention will become apparent from the following description.

[0009] In the following description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the invention. It will be apparent, however, to one skilled in the art that the invention can be practiced without these specific details. In other instances, structures and

devices are shown in block diagram form in order to avoid obscuring the invention.

[0010] Reference in this specification to “one embodiment” or “an embodiment” means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment of the invention. The appearances of the phrase “in one embodiment” in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Moreover, various features are described which may be exhibited by some embodiments and not by others. Similarly, various requirements are described which may be requirements for some embodiments but not other embodiments.

[0011] Although the present invention has been described with reference to specific exemplary embodiments, it will be evident that the various modification and changes can be made to these embodiments without departing from the broader spirit of the invention as set forth in the claims. Accordingly, the specification and drawings are to be regarded in an illustrative sense rather than in a restrictive sense.

[0012] Figure 1 of the drawings shows a high level system architecture 100 within embodiments of the present invention may be practiced. The architecture 100 includes a client machine 102 which is connected to a wide-area network 114, which in some embodiments may include the internet. The client machine 102 may be any electronic device capable of sending and receiving

messages. For example, the client machine 102 may be a mobile telephone, or Personal Digital Assistant (PDA), a Pocket PC, a 2-way pager, etc. The client machine 102 also includes a client 104 which allows a user of the client machine 102 to send and receive messages. The invention as described herein would apply to wired as well as wireless forms of transmitting messages.

[0013] The architecture 100 also includes a server 106 which is connected to the wide-area network 114. In some embodiments, the server 106 may be a server such as is described in co-pending U.S. Patent Application Number _____, which is hereby incorporated by reference. The server 106 also includes logic to filter software 108 which will be described in greater detail with reference to **Figure 2** of the drawings. In one embodiment, the logic to filter would include antispam software 108. Reference numeral 110 indicates a content publisher which includes any entity that publishes subscription-based publications or messages. As will be seen, the content publisher 110 includes a subscription interface 112 which is connected to the wide-area network 114. The purpose of the subscription interface 112 is to manage subscriptions to the publications and messages published by the content publisher 110.

[0014] **Figure 2** of the drawings shows a high-level functional block diagram of components of the logic to filter 108 that are of relevance for purposes of this description. Referring to **Figure 2**, it will be seen that the logic to filter 108 includes a content publisher registration module 108A. The module 108A enables the content publisher 110 to register a publication or message with the server 106 as will be described below. The logic to filter 108 also includes a

database of registered publications 108B and a client interface 108C that interfaces with the client machine 102 as will be described.

[0015] Referring to **Figure 3** of the drawings, a high-level functional block diagram showing the functional components of the client 104 is shown. As will be seen, the client 104 includes an unsubscribed list 104A and a subscribed list 104B, as well as an authentication module 104C. The function of each of these components will become apparent from the description below.

[0016] Referring to **Figure 4** of the drawings, operations performed by the content publisher 110, and the server 106, in accordance with one embodiment, in order to register a publication or message is shown. Referring to **Figure 4**, at 400 the content publisher 110 sends details of the publication or message to be registered to the server 106. The details are sent over the wide-area network. Thereafter at 402, the server 106 registers the publication or message. The particular operations performed in registering the publication or message include, in some embodiments, assigning a random and unique address to the content publisher for the publication or message and assigning an identification number (ID) to the publication or message. The unique address, the assigned ID and the name of the publication or message are then stored in the database 104B of registered publications (see **Figure 2**). At 404, the server 106 sends the unique address assigned to the publication or message to the content publisher 110. The content publisher 110 places the unique assigned address at the top of a distribution list for the publication or message. After completion of operations 400, 402, and 404, the publication or message is registered.

[0017] At 408, the server 106 send a rating to the content publisher 110, who may then publish the spam rating on an associated website. In one embodiment, the rating is referred to as a spamminess rating.

[0018] Referring to **Figure 5** of the drawings, an interaction between the content publisher 110, the client machine 102, and the server 106, in accordance with one embodiment, is shown. As will be seen, at 500, the content publisher 110 sends a publication or message to the client machine 102, over the wide-area network 114. The publication or message is also automatically sent to the server 106 since the unique assigned address is at the head of the distribution list for the publication or message. The server 106 accesses the publication or message and computes a signature therefore, which signature is then associated with the ID for the publication or message. This process is called "content registration."

[0019] In one embodiment, during the above-described content registration process, there is an authentication of the content publisher 110. This authentication of the content publisher 110 may occur because the unique address assigned to the publication or message is both random and unique. Therefore, the content publisher 110 has knowledge of the unique random email address. Thus, when the publication or message is sent to the unique random address, the server 106 can treat all incoming messages to the unique assigned address as belonging to a previously registered publication or message.

[0020] Using a random and unique address for purpose of registration is motivated by ease of use. The content publisher 110 does not have to modify its

existing infrastructure to participate in the publication registration and content registration processes described above. However, it is to be appreciated that in some embodiments, instead of using the implied authentication mechanism described above, an explicit authentication of the content publisher 110 and the publication or message sent by the content publisher 110 may be performed. For example, in one embodiment, public key cryptographic based methods may be used. In such a case, the content publisher 110 will provide a public key associated with a secret key which will then be used to send messages for content registration.

[0021] At 502, the client machine 102 received the publications or messages and computes a signature of the content of the publication or message. At block 504, the client generates a request to determine if the publication or message has been registered at the server 106. The request 504 includes a signature computed at 502. In one embodiment, the signature may be a one-way hash of the content of the publication or message or some other derivative of the content of the publication or message. At 506, the client 104 sends the request to the server 106. The request is received by the logic to filter 108 of the server 106 which then determines at 508, if the signature is registered. This determination involves using the signature as a key to search the database 108B of registered publications or messages to determine if the signature has been previously registered. If the signature has been registered then the ID assigned to the signature is retrieved and sent to the client 104 at 510. If the logic to filter 108 determines that the signature has not been registered then at

510 an appropriate message is sent to the client 104 to notify the client that the signature has not been registered. In some embodiments, the client may be configured to classify a registered publication or message as legitimate, and to classify non-registered messages or publications by a process of default classification which is described below.

[0022] Referring to **Figure 6** of the drawings, an interaction between a user 600, the client machine 102, and the server 106, in accordance with one embodiment of the invention, is shown. At 602, the user 600 provides input to move a publication or message between the subscribed and unsubscribed lists 104B, and 104A, respectively. For example, in one embodiment, the client 104 provides a user interface (UI) that includes a “block” and “unblock” button. By selecting the block and unblock buttons, the user 600 may selectively indicate to the client 104 that a publication or message needs to be placed on the subscribed or unsubscribed lists 104B, and 104A, respectively. In response to receiving the input, at 604, the client 104 updates the subscribed and unsubscribed lists based on the input. At 606, the client 104 receives a publication or message from the content publisher 110. Thereafter operations 608, 610, 612, 616, and 618 are performed which correspond substantially to the operations 502, 504, 506, 508, and 510 shown in **Figure 5** of the drawings. Thus, the operations 608 through 618 are therefore not further described.

[0023] At 620, the client 104 moves the publication or message into the inbox if the publication or message was registered at the server 106 and does not appear in the unsubscribed list 104A. If the publication or message is

registered with the server 106 and appears on the unsubscribed list 104A, then an action is performed based on a configuration of the client 104. For example, the client 104 may be configured to delete the publication or message if it is registered and appears on the unsubscribed list. Alternatively, the client 104 may be configured to place the publication or message in a folder if the publication is registered at the server 106 and appears on the unsubscribed list 104A.

[0024] In one embodiment, the server 106 computes a rating. The rating provides an indication of the number of users who have indicated that the publication or message is unwanted (e.g., spam) using the system described in co-pending U.S. Patent Application Number _____. In one embodiment, the rating is available through a dynamic web service for display on the content publisher's website. In some cases, the rating allows the client 104 to determine a default characterization of a publication or message in the case of a user who has not made an explicit decision on whether or not the user wishes to receive the publication or message. More detail on how the client 104 uses a rating to determine the default characterization is provided below. In one embodiment, the rating is referred to as a spamminess rating. In alternative embodiments, the rating may be based on alternative attributes, without departing from the scope of the invention.

[0025] In one embodiment, the server 106 determines a popularity rating of all registered publications or messages. The popularity rating is calculated on the basis of how many users query a server for an indication of whether a

publication or message is unwanted (e.g., spam). The popularity rating is sent by the server 106 to the content publisher 110, who may then publish the popularity rating on the associated website.

[0026] It will be appreciated that if a publication or message is received for the first time there will be no entry corresponding to publication or message in either the subscribed list 104B or the unsubscribed list 104A. In this case, the client 104 may determine a default characterization for the publication or message. The default characterization may be based on the above described rating, popularity rating, or some other rule. For example, in one embodiment, if the rating is high, the client 104 will by default characterize the publication or message as unwanted. Alternatively, if the rating is low, then the client 104 may automatically will by default characterize the publication or message as legitimate. The values for a high rating and a low rating may be user configured.

[0027] Referring to **Figure 7** of the drawings, reference numeral 700 generally indicates hardware that may be used to implement the server 106, the client machine 102, or the content publisher 110, in accordance with one embodiment. The hardware 700 typically includes at least one processor 702 coupled to a memory 704. The processor 702 may represent one or more processors (e.g., microprocessors), and the memory 704 may represent random access memory (RAM) devices comprising a main storage of the hardware 700, as well as any supplemental levels of memory e.g., cache memories, non-volatile or back-up memories (e.g. programmable or flash memories), read-only memories, etc. In addition, the memory 704 may be considered to include

memory storage physically located elsewhere in the hardware 700, e.g. any cache memory in the processor 702, as well as any storage capacity used as a virtual memory, e.g., as stored on a mass storage device 710.

[0028] The hardware 700 also typically receives a number of inputs and outputs for communicating information externally. For interface with a user or operator, the hardware 700 may include one or more user input devices 706 (e.g., a keyboard, a mouse, etc.) and a display 708 (e.g., a Cathode Ray Tube (CRT) monitor, a Liquid Crystal Display (LCD) panel).

[0029] For additional storage, the hardware 700 may also include one or more mass storage devices 710, e.g., a floppy or other removable disk drive, a hard disk drive, a Direct Access Storage Device (DASD), an optical drive (e.g. a Compact Disk (CD) drive, a Digital Versatile Disk (DVD) drive, etc.) and/or a tape drive, among others. Furthermore, the hardware 400 may include an interface with one or more networks 712 (e.g., a local area network (LAN), a wide area network (WAN), a wireless network, and/or the Internet among others) to permit the communication of information with other computers coupled to the networks. It should be appreciated that the hardware 700 typically includes suitable analog and/or digital interfaces between the processor 702 and each of the components 704, 706, 708 and 712 as is well known in the art.

[0030] The hardware 700 operates under the control of an operating system 714, and executes various computer software applications 716, components, programs, objects, modules, etc. (e.g. a program or module which performs operations described with reference to **Figur s 3 - 5** of the drawings).

Moreover, various applications, components, programs, objects, etc. may also execute on one or more processors in another computer coupled to the hardware 700 via a network 712, e.g. in a distributed computing environment, whereby the processing required to implement the functions of a computer program may be allocated to multiple computers over a network.

[0031] In general, the routines executed to implement the embodiments of the invention, may be implemented as part of an operating system or a specific application, component, program, object, module or sequence of instructions referred to as "computer programs." The computer programs typically comprise one or more instructions set at various times in various memory and storage devices in a computer, and that, when read and executed by one or more processors in a computer, cause the computer to perform operations necessary to execute elements involving the various aspects of the invention. Moreover, while the invention has been described in the context of fully functioning computers and computer systems, those skilled in the art will appreciate that the various embodiments of the invention are capable of being distributed as a program product in a variety of forms, and that the invention applies equally regardless of the particular type of machine or computer-readable media used to actually effect the distribution. Examples of computer-readable media include but are not limited to recordable type media such as volatile and non-volatile memory devices, floppy and other removable disks, hard disk drives, optical disks (e.g., Compact Disk Read-Only Memory (CD ROMS), Digital Versatile

Disks, (DVDs), etc.), among others, and transmission type media such as digital and analog communication links.

[0032] Although the present invention has been described with reference to specific exemplary embodiments, it will be evident that the various modification and changes can be made to these embodiments without departing from the broader spirit of the invention as set forth in the claims. Accordingly, the specification and drawings are to be regarded in an illustrative sense rather than in a restrictive sense.